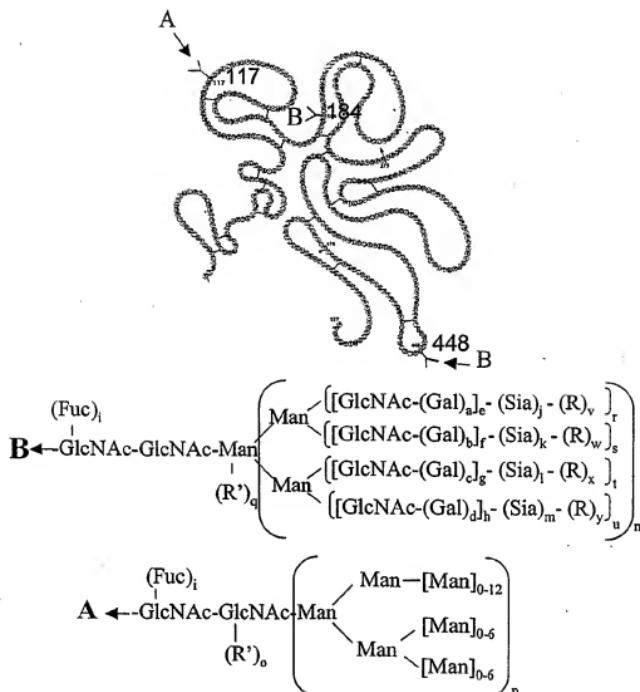


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a-d, i, n-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

j-m (independently selected) = 0 to 20.

R = polymer; R' = sugar, glycoconjugate.

FIG. 40H

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NSO expressed tPA

A = B; a-m, r-u (independently selected) = 0 or 1;  
 n = 1; o, p, q, v-y = 0

- 1. sialidase, alpha-galactosidase
- 2. CMP-SA-levulinate, ST3Gal3,
- 3. H<sub>4</sub>N<sub>2</sub>-PEG

A = B; a-m, r-y (independently selected) = 0 or 1;  
 n = 1; o, p, q = 0;  
 v-y (independently selected) = 1,  
 when j-m (independently selected) is 1;  
 R = PEG.

FIG. 40I

CHO, BHK, 293 cells, Vero expressed tPA

a-g, n, p = 1; h = 1 to 3;  
 j-m, i, (independently selected) = 0 or 1;  
 r-u (independently selected) = 0 to 1; q, o, v-y = 0.

- 1. alpha and beta Mannosidases
- 2. CMP-SA, ST3Gal3
- 3. Galactosyltransferase, UDP-Gal-PEG

a-g, n = 1; h = 1 to 3;  
 i, r-u (independently selected) = 0 or 1; o = 1;  
 q, p, v-y = 0; j-m (independently selected) = 0 or 1;  
 R' = Gal-PEG

FIG. 40J

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Plant expressed tPA

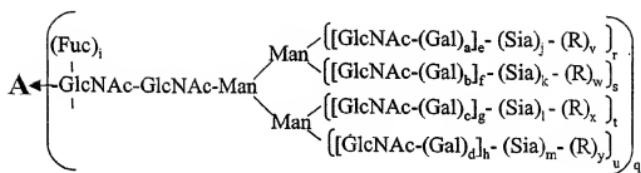
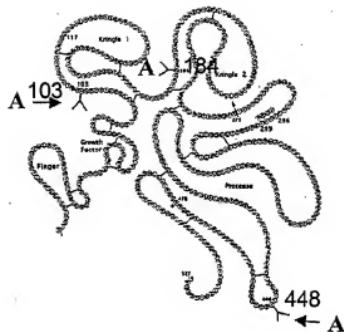
A = B; a-d, f, h, j-m, s, u , v-y = 0;  
e, g, i, q, r, t (independently selected) = 0 or 1;  
n = 1; R' = xylose

- ↓
1. hexosaminidase,
  2. alpha mannosidase and  
xylosidase
  3. GlcNAc transferase, UDP-  
GlcNAc-PEG

A = B; a-d, f, h, j-n, s, u , v-y = 0;  
e, g, i, r, t (independently selected) = 0;  
q = 1; R' = GlcNAc-PEG.

FIG. 40K

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a-d, i, q-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 6.

j-m (independently selected) = 0 to 100.

v-y = 0; R = polymer.

FIG. 40L

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CHO, BHK, 293 cells, Vero expressed TNK tPA  
 a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y = 0.

- ↓  
 1. Sialidase  
 2. CMP-SA-PEG (16 mol eq),  
 ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y (independently selected) = 1,  
 when j-m (independently selected) is 1;  
 R = PEG.

## FIG. 40M

CHO, BHK, 293 cells, Vero expressed TNK tPA  
 a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y = 0.

- ↓  
 1. Sialidase  
 2. CMP-SA-PEG (1.2 mol eq),  
 ST3Gal3  
 3. CMP-SA (16 mol eq), ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y (independently selected) = 0 or 1;  
 R = PEG.

## FIG. 40N

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NSO expressed TNK tPA

a-d, i-m, q-u (independently selected) = 0 or 1;

e-h = 1; v-y = 0;

Sia (independently selected) = Sia or Gal.

1. Sialidase and  $\alpha$ -galactosidase
2. Galactosyltransferase, UDP-Gal
3. CMP-SA-PEG, ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;

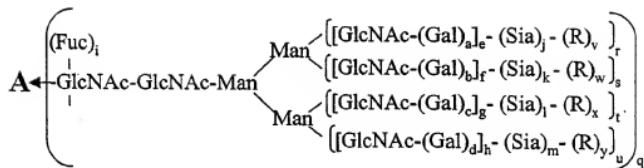
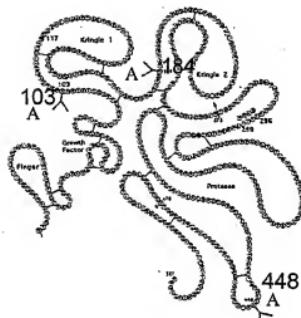
e-h = 1; v-y (independently selected) = 1,

when j-m (independently selected) is 1;

R = PEG.

FIG. 400

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a-d, i, q-u (independently selected) = 0 or 1.  
e-h (independently selected) = 0 to 6.  
j-m (independently selected) = 0 to 100.  
v-y = 0; R = polymer.

FIG. 40P

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CHO, BHK, 293 cells, Vero expressed TNK tPA  
 a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y = 0.

- ↓
1. Sialidase
  2. CMP-SA-PEG (16 mol eq),  
 ST3Gal3
  3. CMP-SA, ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y (independently selected) = 0 or 1;  
 R = PEG.

FIG. 40Q

CHO, BHK, 293 cells, Vero expressed TNK tPA  
 a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y = 0.

- ↓
1. CMP-SA-levulinic acid, ST3Gal3,  
 buffer, salt
  2. H<sub>4</sub>N<sub>2</sub>-PEG

a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y (independently selected) = 0 or 1;  
 R = PEG.

FIG. 40R

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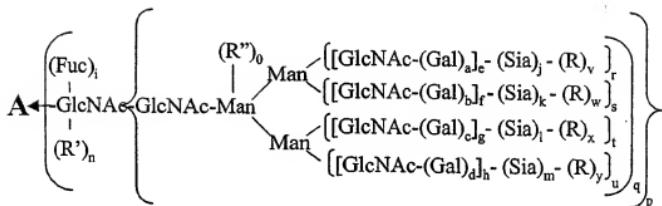
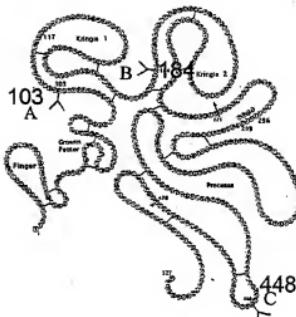
CHO, BHK, 293 cells, Vero expressed TNK tPA  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

1. CMP-SA,  $\alpha$ 2,8-ST

a-d, i, q-u (independently selected) = 0 or 1;  
e-h = 1; j-m (independently selected) = 0-20;  
v-y (independently selected) = 0.

FIG. 40S

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a-d, i, n-y (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 6.

j-m (independently selected) = 0 to 100.

R = modifying group, mannose, oligo-mannose;

R' = H, glycosyl residue, modifying group, glycoconjugate.

R'' = glycosyl residue.

FIG. 40T

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Insect cell expressed TNK tPA  
 a-d, f, h, j-m, s, u, v-y = 0;  
 e, g, i, q, r, t (independently selected) = 0 or 1.

- ↓  
 1. GNT's 1,2,4,5, UDP-GlcNAc  
 2. Galactosyltransferase, UDP-Gal-PEG

a-i, q-u (independently selected) = 0 or 1;  
 j-m = 0; v-y (independently selected) = 1,  
 when e-h (independently selected) is 1;  
 R = PEG.

FIG. 40U

Yeast expressed TNK tPA  
 a-m = 0; q-y (independently selected) = 0 to 1; p = 1;  
 R (branched or linear) = Man, oligomannose.

- ↓  
 1. Endoglycanase  
 2. Galactosyltransferase, UDP-Gal-PEG

a-m, p-y = 0; n (independently selected) = 0 or 1;  
 R' = -Gal-PEG.

FIG. 40V

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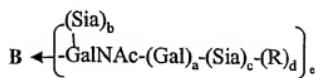
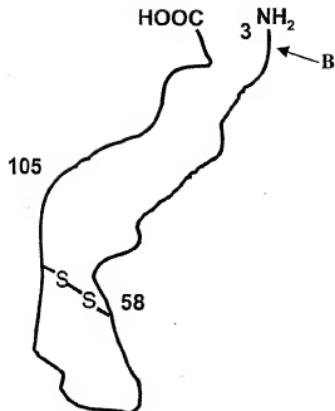
CHO, BHK, 293 cells, Vero expressed TNK tPA  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

- ↓
1. CMP-SA-linker-Gal-UDP,  
ST3Gal3
  2. Galactosyltransferase, anti-TNF  
IG chimera produced in CHO.

a-m, r-u (independently selected) = 0 or 1; p, q = 1;  
n = 0; v-y (independently selected) = 0 or 1;  
R = linker-anti-TNF IG chimera protein.

FIG. 40W

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a-c, e (independently selected) = 0 or 1;  
d = 0;  
R = modifying group, mannose, oligo-mannose.

FIG. 41A

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CHO, BHK, 293 cells, Vero expressed IL-2  
a-c, e (independently selected) = 0 or 1; d = 0

- ↓  
1. Sialidase  
2. CMP-SA-PEG, ST3Gal1

a-d, e (independently selected) = 0 or 1;  
R = PEG.

FIG. 41B

Insect cell expressed IL-2  
a, e (independently selected) = 0 or 1;  
b, c, d = 0.

- ↓  
1. Galactosyltransferase, UDP-Gal  
2. CMP-SA-PEG, ST3Gal1

a, c, d, e (independently selected) = 0 or 1;  
R = PEG.

FIG. 41C

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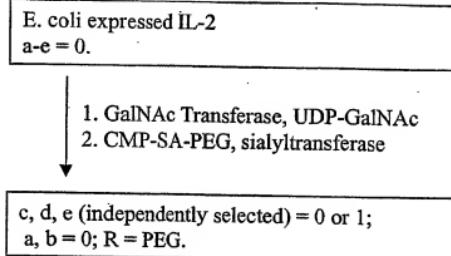


FIG. 41D

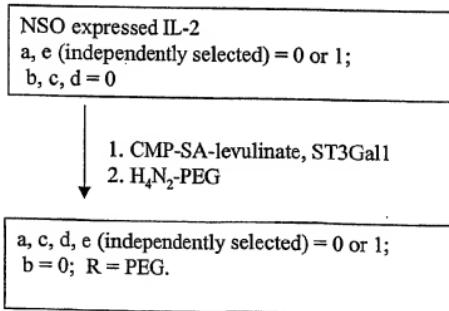


FIG. 41E

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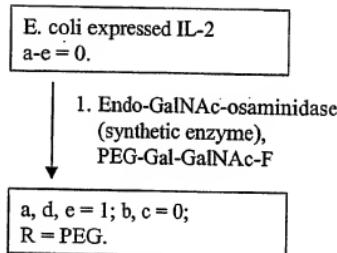


FIG. 41F

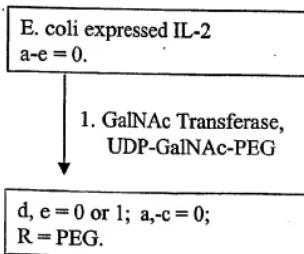
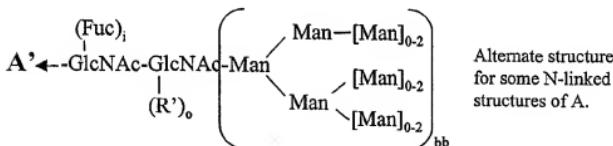
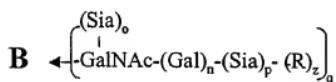
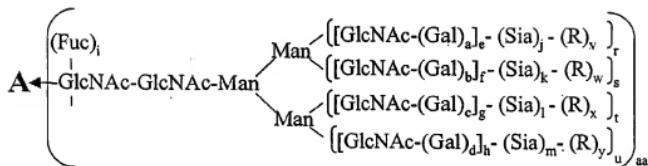


FIG. 41G

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2 peptides  
**A** and **A'** - N-linked sites  
**B** - O-linked sites



a-d, i, n-u (independently selected) = 0 or 1.  
 aa, bb (independently selected) = 0 or 1.  
 e-h (independently selected) = 0 to 6.  
 j-m (independently selected) = 0 to 20.  
 v-z = 0; R = polymer, glycoconjugate.

FIG. 42A

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CHO, BHK, 293s cells, Vero, MDCK, HEKC expressed Factor VIII.  
 $e-h = 1$  to 4;  
 $aa, bb, a-d, j-m, i, n-u$  (independently selected) = 0 or 1;  
 $v-z = 0$ .

- ↓  
 1. Sialidase  
 2. CMP-SA-PEG, ST3Gal3

$e-h = 1$  to 4;  
 $aa, bb, a-d, i, n, q-u$  (independently selected) = 0 or 1;  
 $o, p, z = 0$ ;  $j-m, v-y$  (independently selected) = 0 or 1;  
 $R = PEG$ .

## FIG. 42B

CHO, BHK, 293S cells, Vero, MDCK, 293S, HEKC expressed Factor VIII.  
 $e-h = 1$  to 4;  
 $aa, bb, a-d, j-m, i, n-u$  (independently selected) = 0 or 1;  
 $v-z = 0$ .

- ↓  
 1. Sialidase  
 2. CMP-SA-PEG, ST3Gal3  
 3. ST3Gal1, CMP-SA

$e-h = 1$  to 4;  
 $aa, bb, a-d, i, n, p-u$  (independently selected) = 0 or 1;  
 $o, z = 0$ ;  $j-m, v-y$  (independently selected) = 0 or 1;  
 $R = PEG$ .

## FIG. 42C

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CHO, BHK, 293s cells, Vero, MDCK, HEKC  
expressed Factor VIII.

e-h = 1 to 4;

aa, bb, a-d, j-m, i, n-u (independently selected)=0 or 1;  
v-z = 0.

↓ 1. CMP-SA-PEG, ST3Gal3

e-h = 1 to 4;

aa, bb, a-d, i, n-u (independently selected) = 0 or 1;  
z = 0; j-m, v-y (independently selected) = 0 or 1;  
R = PEG.

## FIG. 42D

CHO, BHK, 293S cells, Vero, MDCK, HEKC  
expressed Factor VIII.

e-h = 1 to 4;

aa, bb, a-d, j-m, i, n-u (independently selected) 0 or 1;  
v-z = 0.

↓ 1. CMP-SA-PEG, ST3Gall

e-h = 1 to 4;

aa, bb, a-d, i, n-u (independently selected) = 0 or 1;  
z = 0; j-m, v-y (independently selected) = 0 or 1;  
R = PEG.

## FIG. 42E

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CHO, BHK, 293S cells, Vero, MDCK, HEK293  
expressed Factor VIII.

e-h = 1 to 4;

aa, bb, a-d, j-m, i, n-u (independently selected)=0 or 1;  
v-z = 0.

↓ 1. CMP-SA-PEG,  $\alpha$ 2,8-ST

e-h = 1 to 4;

aa, bb, a-d, i, n-y (independently selected) = 0 or 1;

z = 0; j-m (independently selected) = 0 to 2;

v-y (independently selected) = 1,

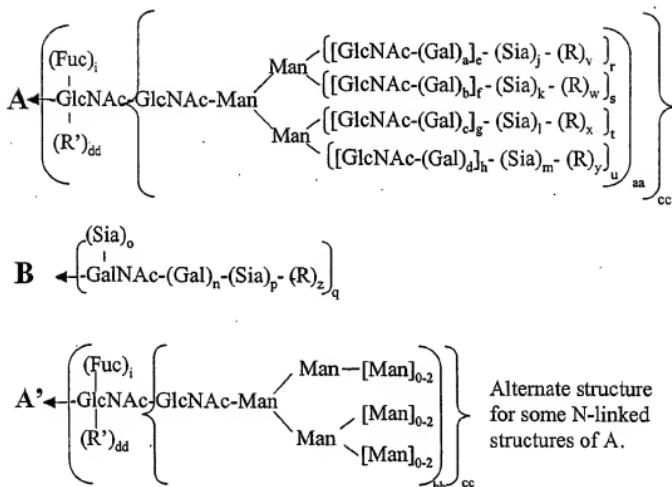
when j-m (independently selected) is 2;

R = PEG.

FIG. 42F

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2 peptides  
**A or A'** - N-linked sites  
**B** - O-linked sites



a-d, i, n-u, (independently selected) = 0 or 1.

aa, bb, cc, dd (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 6.

j-m (independently selected) = 0 to 20.

v-z = 0;

R = modifying group, mannose, oligo-mannose.

R' = H, glycosyl residue, modifying group, glycoconjugate.

FIG. 42G

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CHO, BHK, 293S cells, Vero, MDCK, HEK293  
expressed Factor VIII.

e-h = 1 to 4;

aa, bb, cc, a-d, j-m, i, n-u (independently selected) = 0 or 1;  
dd, v-z = 0.

- ↓  
 1. CMP-SA-levulinate, ST3Gal3,  
 2. H<sub>4</sub>N<sub>2</sub>-PEG

e-h = 1 to 4;

aa, bb, cc, a-d, i, n-u (independently selected) = 0 or 1;  
dd, z = 0; j-m, v-y (independently selected) = 0 or 1;  
R = PEG.

## FIG. 42H

CHO, BHK, 293S cells, Vero, MDCK, HEK293  
expressed Factor VIII.

e-h = 1 to 4;

aa, bb, cc, a-d, j-m, i, n-u (independently selected) = 0 or 1;  
dd, v-z = 0.

- ↓  
 1. endo-H  
 2. galactosyltransferase, UDP-Gal-PEG

e-h = 1 to 4;

aa, bb, dd, a-d, i, j-u (independently selected) = 0 or 1;  
cc, v-z = 0; R' = -Gal-PEG.

## FIG. 42I

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CHO, BHK, 293S cells, Vero, MDCK, HEKC  
expressed Factor VIII.

e-h = 1 to 4;

aa, bb, cc, a-d, j-m, i, n-u (independently selected) = 0 or 1;  
dd, v-z = 0.

- ↓ 1. ST3Gal3, CMP-SA
- 2. endo-H
- 3. galactosyltransferase, UDP-Gal-PEG

e-h = 1 to 4;

aa, bb, dd, a-d, i, j-u (independently selected) = 0 or 1;  
cc, v-z = 0; R' = -Gal-PEG.

## FIG. 42J

CHO, BHK, 293S cells, Vero, MDCK, HEKC  
expressed Factor VIII.

e-h = 1 to 4;

aa, bb, cc, a-d, j-m, i, n-u (independently selected) = 0 or 1;  
dd, v-z = 0.

- ↓ 1. mannosidases
- 2. GNT 1 & 2, UDP-GlcNAc
- 3. galactosyltransferase, UDP-Gal-PEG

e-h = 1 to 4;

aa, a-d, i, j-y (independently selected) = 0 or 1;  
bb, cc, dd, z = 0; R = PEG.

## FIG. 42K

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CHO, BHK, 293S cells, Vero, MDCK, HEK cells  
expressed Factor VIII.

e-h = 1 to 4;

aa, bb, cc, a-d, j-m, i, n-u (independently selected) = 0 or 1;  
dd, v-z = 0.

1. mannosidases
2. GNT-1,2, 4 & 5; UDP-GlcNAc
3. galactosyltransferase, UDP-Gal
4. ST3Gal3, CMP-SA

e-h = 1 to 4;

aa, bb, cc, a-d, i, j-q (independently selected) = 0 or 1;  
dd, v-z = 0.

## FIG. 42L

CHO, BHK, 293S cells, Vero, MDCK, HEK cells  
expressed Factor VIII.

e-h = 1 to 4;

aa, bb, cc, a-d, j-m, i, n-u (independently selected) = 0 or 1;  
dd, v-z = 0.

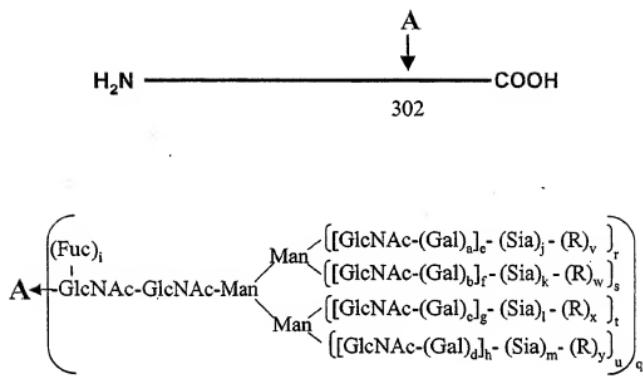
1. mannosidases
2. GNT-1, UDP-GlcNAc-PEG

e-h = 0 to 4;

aa, a-d, i, j-y (independently selected) = 0 or 1;  
bb, cc, dd, z = 0.

## FIG. 42M

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a-d, i, q-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 6.

j-m (independently selected) = 0 to 100.

v-y = 0; R = polymer.

FIG. 43A

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CHO, BHK, 293 cells, Vero expressed Urokinase.  
 a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y = 0.

- ↓
1. Sialidase
  2. CMP-SA-PEG (16 mol eq),  
 ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y (independently selected) = 1,  
 when j-m (independently selected) is 1;  
 R = PEG.

FIG. 43B

CHO, BHK, 293 cells, Vero expressed Urokinase.  
 a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y = 0.

- ↓
1. Sialidase
  2. CMP-SA-PEG (1.2 mol eq),  
 ST3Gal3
  3. CMP-SA (16 mol eq), ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y (independently selected) = 0 or 1;  
 R = PEG.

FIG. 43C

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CHO, BHK, 293 cells, Vero expressed Urokinase.  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

- ↓
1. Sialidase
  2. CMP-SA-PEG (16 mol eq),  
ST3Gal3
  3. CMP-SA, ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y (independently selected) = 0 or 1;  
R = PEG.

FIG. 43D

CHO, BHK, 293 cells, Vero expressed Urokinase.  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

- ↓
1. CMP-SA-levulinate, ST3Gal3,  
buffer, salt
  2. H<sub>4</sub>N<sub>2</sub>-PEG

a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y (independently selected) = 0 or 1;  
R = PEG.

FIG. 43E

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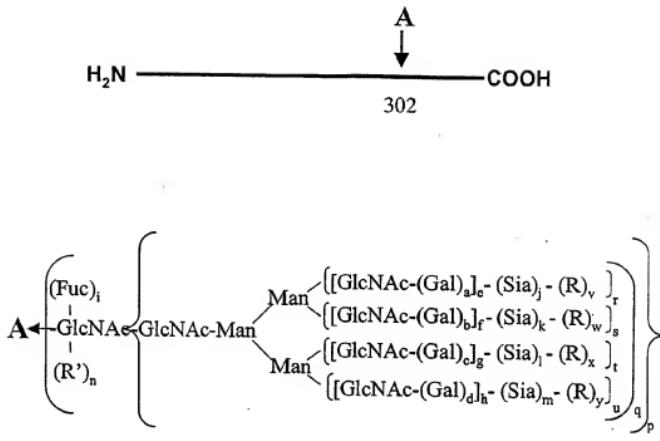
CHO, BHK, 293 cells, Vero expressed Urokinase.  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

↓  
1. CMP-SA,  $\alpha$ 2,8-ST

a-d, i, q-u (independently selected) = 0 or 1;  
e-h = 1;  
j-m (independently selected) = 0-20;  
v-y (independently selected) = 0.

FIG. 43F

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a-d, i, n, p-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 6.

j-m (independently selected) = 0 to 100.

v-y = 0;

R = modifying group, mannose, oligo-mannose;

R' = H, glycosyl residue, modifying group, glycoconjugate.

FIG. 43G

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Insect cell expressed Urokinase.

a-d, f, h, j-n, s, u, v-y = 0;  
e, g, i, q, r, t (independently selected) = 0 or 1.

- ↓
1. GNT's 1,2,4,5, UDP-GlcNAc
  2. Galactosyltransferase, UDP-Gal-PEG

a-i, q-u (independently selected) = 0 or 1;  
j-n = 0; v-y (independently selected) = 1,  
when e-h (independently selected) is 1;  
R = PEG.

FIG. 43H

Yeast expressed Urokinase.

a-n = 0;  
q-y (independently selected) = 0 to 1;  
p = 1; R (branched or linear) = Man, oligomannose.

- ↓
1. Endoglycanase
  2. Galactosyltransferase, UDP-Gal
  3. CMP-SA-PEG, ST3Gal3

a-m, p-y = 0; n (independently selected) = 0 or 1;  
R' = -Gal-Sia-PEG.

FIG. 43I

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CHO, BHK, 293 cells, Vero expressed Urokinase.  
 a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; n, v-y = 0.

- 1. CMP-SA-linker-SA-CMP, ST3Gal3
- 2. ST3Gal1, desialylated Urokinase produced in CHO.
- 3. CMP-SA, ST3Gal3, ST3Gal1

a-m, q-u (independently selected) = 0 or 1;  
 p = 1; n = 0;  
 v-y (independently selected) = 0 or 1;  
 R = linker-Urokinase.

### FIG. 43J

Isolated Urokinase.  
 a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y = 0; n = 0;  
 Sia (independently selected) = Sia or SO<sub>4</sub>;  
 Gal (independently selected) = Gal or GalNAc;  
 GlcNAc (independently selected) = GlcNAc or GlcNAc-Fuc.

- 1. sulfohydrolase
- 2. CMP-SA-PEG, sialyltransferase

a-d, i-m, q-u (independently selected) = 0 or 1;  
 n = 0; e-h = 1; Sia = Sia;  
 Gal (independently selected) = Gal or GalNAc;  
 GlcNAc (independently selected) = GlcNAc or GlcNAc-Fuc.  
 v-y (independently selected) = 0 or 1;  
 R = PEG.

### FIG. 43K

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Isolated Urokinase.

a-d, i-m, q-u (independently selected) = 0 or 1;

e-h = 1; n = 0; v-y = 0;

Sia (independently selected) = Sia or SO<sub>4</sub>;

Gal (independently selected) = Gal or GalNAc;

GlcNAc (independently selected) = GlcNAc or GlcNAc-Fuc.

- ↓  
1. sulfohydrolase, hexosaminidase  
2. UDP-Gal-PEG, galactosyltransferase

a-d, i, q-u (independently selected) = 0 or 1;

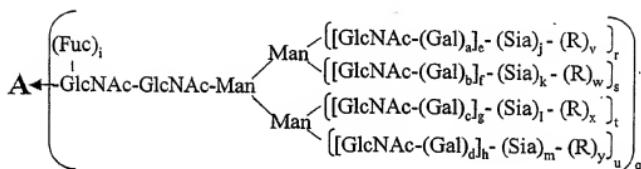
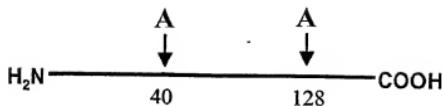
e-h = 1; j-n = 0; Gal (independently selected) = Gal;

GlcNAc (independently selected) = GlcNAc or GlcNAc-Fuc;

v-y (independently selected) = 0 or 1; R = PEG.

FIG. 43L

192/498



a-d, i, q-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 6.

j-m (independently selected) = 0 to 100.

v-y = 0; R = polymer, glycoconjugate.

FIG. 44A

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CHO, BHK, 293 cells, Vero expressed DNase I.  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

- ↓  
1. Sialidase  
2. CMP-SA-PEG (16 mol eq),  
ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1;  
v-y (independently selected) = 1,  
when j-m (independently selected) is 1;  
R = PEG.

## FIG. 44B

CHO, BHK, 293 cells, Vero expressed DNase I.  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

- ↓  
1. Sialidase  
2. CMP-SA-PEG (1.2 mol eq), ST3Gal3  
3. CMP-SA (16 mol eq), ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y (independently selected) = 0 or 1;  
R = PEG.

## FIG. 44C

194/498

CHO, BHK, 293 cells, Vero expressed DNase I.  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

- ↓
1. Sialidase
  2. CMP-SA-PEG (16 mol eq), ST3Gal3
  3. CMP-SA, ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y (independently selected) = 0 or 1;  
R = PEG.

FIG. 44D

CHO, BHK, 293 cells, Vero expressed DNase I.  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

- ↓
1. CMP-SA-levulinic acid, ST3Gal3,  
buffer, salt
  2. H<sub>4</sub>N<sub>2</sub>-PEG

a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y (independently selected) = 0 or 1;  
R = PEG.

FIG. 44E

195/498

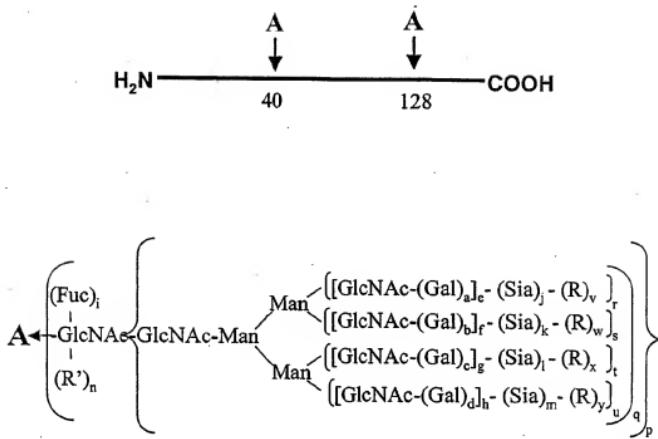
CHO, BHK, 293 cells, Vero expressed DNase I.  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

↓  
1. CMP-SA,  $\alpha$ 2,8-ST

a-d, i, q-u (independently selected) = 0 or 1;  
e-h = 1;  
j-m (independently selected) = 0-20;  
v-y (independently selected) = 0.

FIG. 44F

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a-d, i, n, p-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 6.

j-m (independently selected) = 0 to 100.

v-y = 0;

R = modifying group, mannose, oligo-mannose;

R' = H, glycosyl residue, modifying group,

glycoconjugate.

FIG. 44G

197/498

Insect cell expressed DNase I.  
 a-d, f, h, j-n, s, u, v-y = 0;  
 e, g, i, q, r, t (independently selected) = 0 or 1.

- ↓  
 1. GNT's 1,2,4,5, UDP-GlcNAc  
 2. Galactosyltransferase, UDP-Gal-PEG

a-i, q-u (independently selected) = 0 or 1; j-n = 0;  
 v-y (independently selected) = 1,  
 when e-h (independently selected) is 1;  
 R = PEG.

### FIG. 44H

Yeast expressed DNase I.  
 a-n = 0;  
 q-y (independently selected) = 0 to 1;  
 p = 1; R (branched or linear) = Man, oligomannose.

- ↓  
 1. Endoglycanase  
 2. Galactosyltransferase, UDP-Gal  
 3. CMP-SA-PEG, ST3Gal3

a-n, p-y = 0; n (independently selected) = 0 or 1;  
 R' = -Gal-Sia-PEG.

### FIG. 44I

198/498

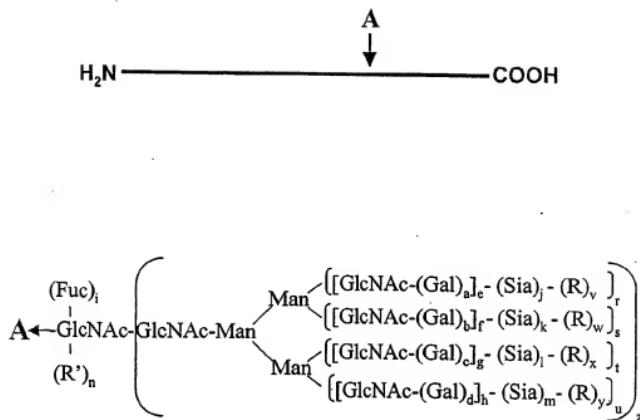
CHO, BHK, 293 cells, Vero expressed DNase I.  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; n, v-y = 0.

- ↓
1. CMP-SA-linker-SA-CMP, ST3Gal3
  2. ST3Gal1, desialylated alpha-1-  
Proteinase inhibitor.
  3. CMP-SA, ST3Gal3, ST3Gal1

a-m, q-u (independently selected) = 0 or 1;  
p = 1; n = 0;  
v-y (independently selected) = 0 or 1;  
R = linker- alpha-1-Proteinase inhibitor.

FIG. 44J

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a-d, i, r-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

j-m (independently selected) = 0 or 1.

n, v-y = 0; z = 0 or 1;

R = modifying group, mannose, oligo-mannose;

R' = H, glycosyl residue, modifying group,  
glycoconjugate.

FIG. 45A

200/498

CHO, BHK, 293 cells, Vero expressed Insulin.  
 $a-m, r-u$  (independently selected) = 0 or 1;  
 $n = 0; v-y = 0; z = 1.$

- ↓  
 1. Sialidase  
 2. CMP-SA-PEG, ST3Gal3

$a-m, r-u$  (independently selected) = 0 or 1;  
 $v-y$  (independently selected) = 1,  
 when  $j-m$  (independently selected) is 1;  
 $n = 0; R = PEG; z = 1.$

FIG. 45B

Insect cell expressed Insulin.  
 $a-h, j-n, s-y = 0;$   
 $i, r$  (independently selected) = 0 or 1;  $z = 1.$

- ↓  
 1. GNT's 1&2, UDP-GlcNAc-PEG

$a-d, f, h, j-n, s, u, w, y = 0;$   
 $e, g, i, r, t, v, x$  (independently selected) = 0 or 1;  
 $v, x$  (independently selected) = 1,  
 when  $e, g$  (independently selected) is 1;  
 $z = 1; R = PEG.$

FIG. 45C

201/498

Yeast expressed Insulin.

a-n = 0; r-y (independently selected) = 0 to 1;

z = 1;

R (branched or linear) = Man, oligomannose or  
polysaccharide.



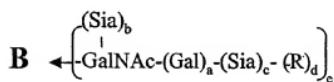
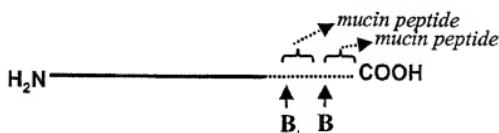
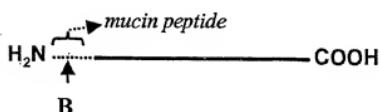
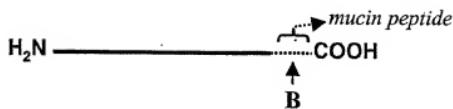
1. Endo-H

2. Galactosyltransferase, UDP-Gal-PEG

a-m, r-z= 0; n = 1; R' = -Gal-PEG.

FIG. 45D

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a-c, e (independently selected) = 0 or 1;  
d = 0; R = polymer

FIG. 45E

203/498

CHO, BHK, 293 cells, Vero expressed insulin-mucin fusion protein.  
a-c, e (independently selected) = 0 or 1; d = 0



1. Sialidase
2. CMP-SA-PEG, ST3Gal1

a-d, e (independently selected) = 0 or 1; R = PEG.

FIG. 45F

Insect cell expressed Insulin-mucin fusion protein.  
a, e (independently selected) = 0 or 1; b, c, d = 0.



1. Galactosyltransferase, UDP-Gal-PEG

a, d, e (independently selected) = 0 or 1;  
b, c = 0; R = PEG.

FIG. 45G

204/498

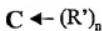
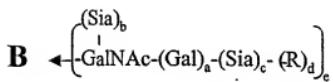
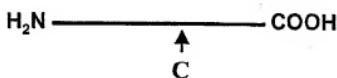
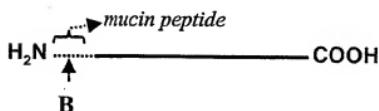
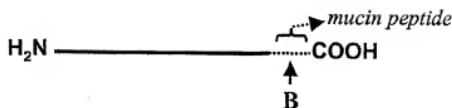
E. coli expressed Insulin-mucin fusion protein.  
a-e = 0.

- 
1. GalNAc Transferase, UDP-GalNAc
  2. CMP-SA-PEG, sialyltransferase

c, d, e (independently selected) = 0 or 1;  
a, b = 0; R = PEG.

FIG. 45H

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a-c, e (independently selected) = 0 or 1;  
 d = 0; R = modifying group, mannose,  
 oligo-mannose.

FIG. 45I

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E. coli expressed Insulin-mucin fusion protein.  
a-e, n = 0.

↓  
1. GalNAc Transferase,  
UDP-GalNAc-PEG

d, e (independently selected) = 0 or 1;  
a-c, n = 0; R = PEG.

FIG. 45J

E. coli expressed Insulin-mucin fusion protein.  
a-e, n = 0.

↓  
1. GalNAc Transferase,  
UDP-GalNAc-linker-SA-CMP  
2. ST3Gal3, asialo-transferrin  
3. CMP-SA, ST3Gal3

d, e (independently selected) = 0 or 1;  
a-c, n = 0; R = linker-transferrin.

FIG. 45K

207/498

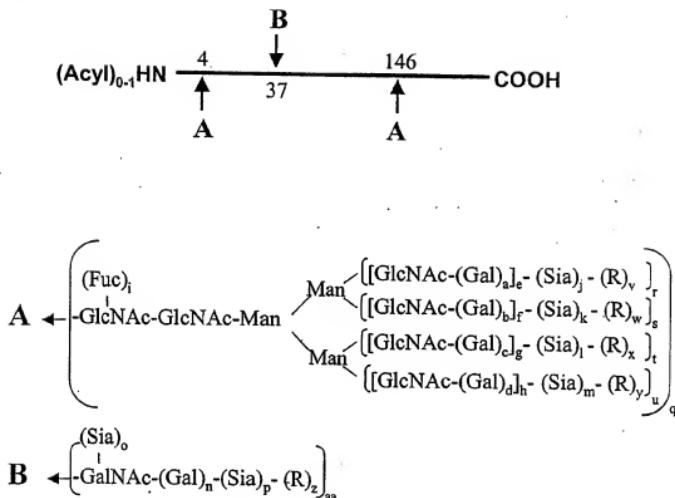
E. coli expressed Insulin (N)—no mucin peptide.  
a-e, n = 0.

- 
1. NHS-CO-linker-SA-CMP
  2. ST3Gal3, asialo-transferrin
  3. CMP-SA, ST3Gal3

a-e = 0; n = 1;  
R' = linker-transferrin.

FIG. 45L

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a-d, i, n-u, aa (independently selected) = 0 or 1.  
 e-h (independently selected) = 0 to 6.  
 j-m (independently selected) = 0 to 100.  
 v-y = 0; R = polymer, glycoconjugate.

FIG. 46A

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CHO, BHK, 293 cells, Vero expressed M-antigen.  
 a-d, i-m, o-u, aa (independently selected) = 0 or 1;  
 n, e-h = 1; v-z = 0.

- ↓
1. Sialidase
  2. CMP-SA-linker-lipid-A,  
 ST3Gal3

a-d, i-m, q-u, aa (independently selected) = 0 or 1;  
 o, p, z = 0; n, e-h = 1;  
 v-y (independently selected) = 1,  
 when j-m (independently selected) is 1;  
 R = linker-lipid-A.

FIG. 46B

CHO, BHK, 293 cells, Vero expressed M-antigen.  
 a-d, i-m, o-u, aa (independently selected) = 0 or 1;  
 n, e-h = 1; v-z = 0.

- ↓
1. sialidase
  2. CMP-SA-linker-tetanus toxin, ST3Gal1
  3. CMP-SA, ST3Gal3

a-d, i-m, p-u, z, aa (independently selected) = 0 or 1;  
 o, v-y = 0; n, e-h = 1; R = tetanus toxin.

FIG. 46C

210/498

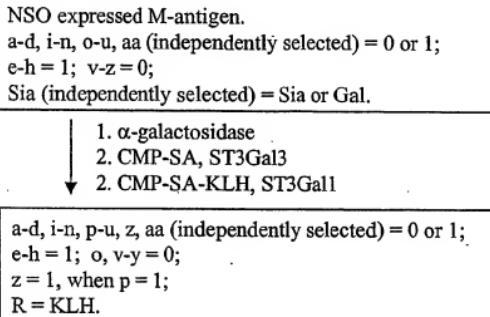


FIG. 46D

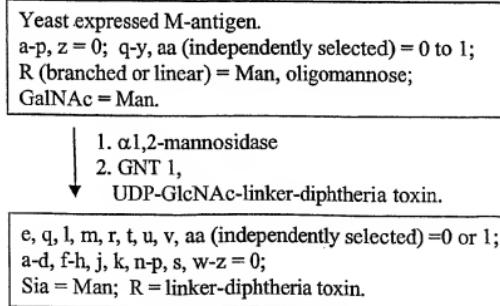


FIG. 46E

211/498

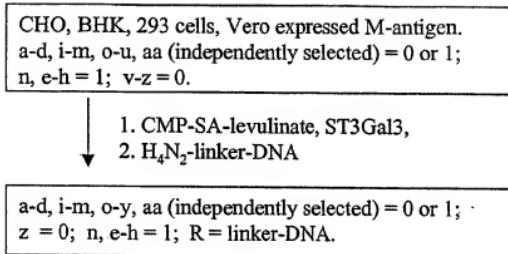


FIG. 46F

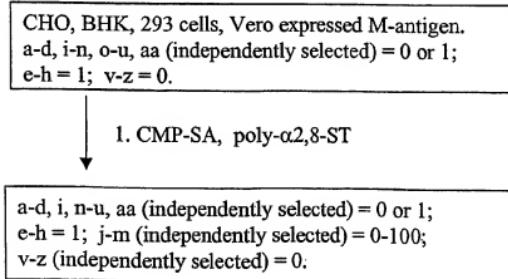
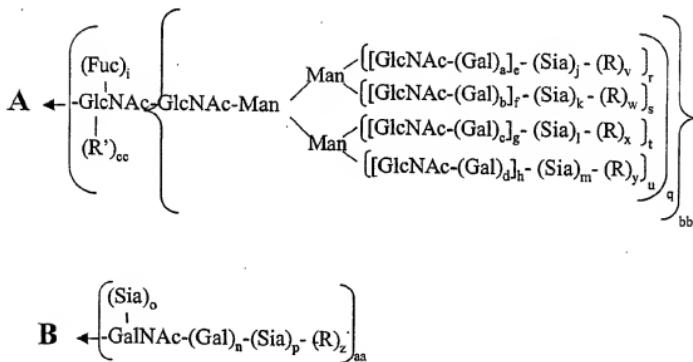
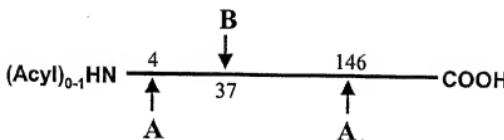


FIG. 46G

-212/498



a-d, i, n, q-u, aa, bb, (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 6.

j-p (independently selected) = 0 to 100

$$\text{C}_G(\mathbf{v}) = \emptyset$$

R = modifying group, mannose, oligo-mannose

R' = modifying group, mannose, oligo-mannose  
 R' = H glycosyl residue, modifying group

R = H, glycosyl residue, modifying group, glycoconjugate

FIG. 46H

213/498

Insect cell expressed M-antigen.  
 a-d, f, h, j-m, o, p, s, u, v-z, cc = 0;  
 bb = 1;  
 e, g, i, n, q, r, t, aa (independently selected) = 0 or 1.

↓  
 1. GNT-2, UDP-GlcNAc-linker-  
 Neisseria protein

a, c, e, g, i, n, q, r, t, v, x, aa (independently selected) =  
 0 or 1;  
 b, d, f, h, j-p, s, u, w, y, z, cc = 0;  
 bb = 1; R = -linker-Neisseria protein.

FIG. 46I

Yeast expressed M-antigen.  
 a-p, z, cc = 0;  
 q-y, aa (independently selected) = 0 to 1;  
 bb = 1; R (branched or linear) = Man, oligomannose;  
 GalNAc = Man.

↓  
 1. Endoglycanase  
 2. Galactosyltransferase,  
 UDP-Gal-linker-Neisseria protein

a-p, r-z, bb = 0;  
 q, aa, cc (independently selected) = 0 or 1;  
 R' = -Gal-linker-Neisseria protein.

FIG. 46J

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Yeast expressed M-antigen.

a-p, z, cc = 0;

q-y, aa (independently selected) = 0 to 1; bb = 1;

R (branched or linear) = Man, oligomannose;

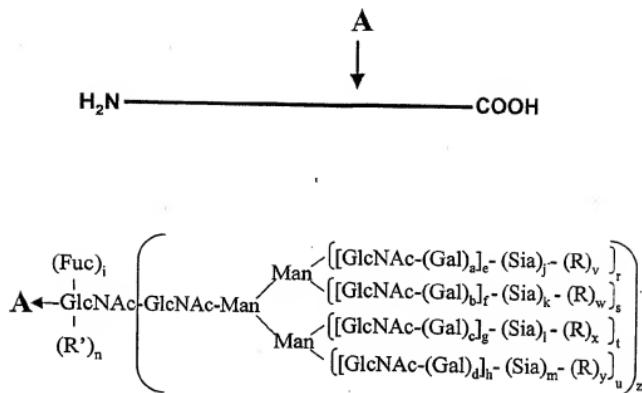
GalNAc = Man.

1. mannosidases
- 2, GNT 1 & 2, UDP-GlcNAc
3. UDP-Gal, Galactosyltransferase,
4. CMP-SA, sialyltransferase

a, c, e, g, j, l, q, r, t, aa (independently selected) = 0 or 1;  
b, d, f, h, k, m-p, s, u-z, cc = 0; bb = 1.

FIG. 46K

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a-d, i, r-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

j-m (independently selected) = 0 or 1.

n, v-y = 0; z = 0 or 1;

R = modifying group, mannose, oligo-mannose;

R' = H, glycosyl residue, modifying group,  
glycoconjugate.

FIG. 47A

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CHO, BHK, 293 cells, Vero expressed Growth Hormone.

a-m, r-u (independently selected) = 0 or 1;  
 $n = 0$ ; v-y = 0; z = 1.

- ↓
1. Sialidase
  2. CMP-SA-PEG, ST3Gal3

a-m, r-u (independently selected) = 0 or 1;  
 $v-y$  (independently selected) = 1,  
 when j-m (independently selected) is 1;  
 $n = 0$ ; R = PEG; z = 1.

FIG. 47B

Insect cell expressed growth hormone.

a-h, j-n, s-y = 0;  
 i, r (independently selected) = 0 or 1; z = 1.

- ↓
1. GNT's 1&2, UDP-GlcNAc-PEG

a-d, f, h, j-n, s, u, w, y = 0;  
 e, g, i, r, t, v, x (independently selected) = 0 or 1;  
 $v, x$  (independently selected) = 1,  
 when e, g (independently selected) is 1;  
 $z = 1$ ; R = PEG.

FIG. 47C

217/498

Yeast expressed growth hormone.  
a-n = 0; r-y (independently selected) = 0 to 1;  
z = 1;  
R (branched or linear) = Man, oligomannose or  
polysaccharide.

- ↓  
1. Endo-H  
2. Galactosyltransferase, UDP-Gal-PEG

a-m, r-z= 0; n = 1; R' = -Gal-PEG.

FIG. 47D

218/498

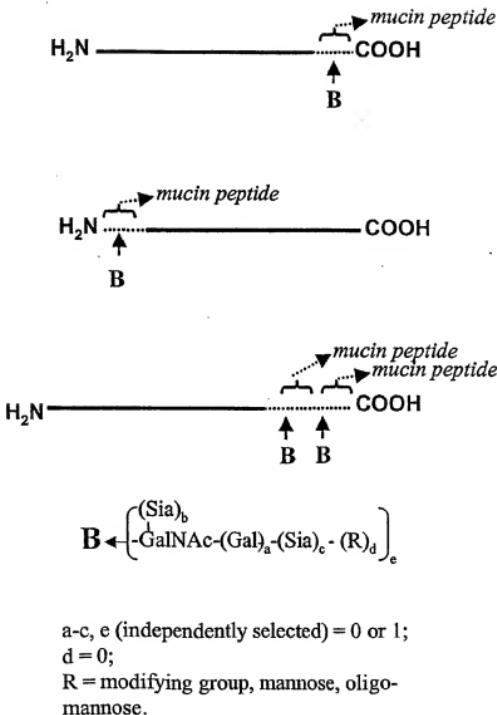


FIG. 47E

219/498

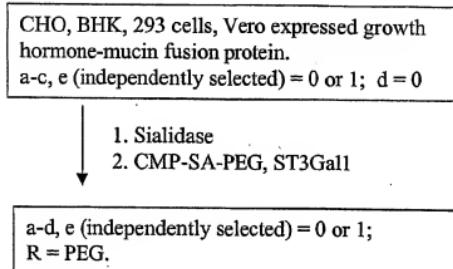


FIG. 47F

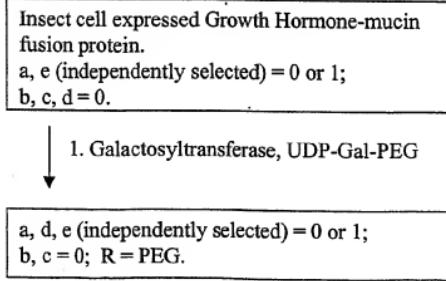


FIG. 47G

220/498

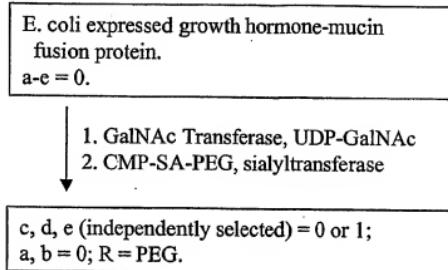


FIG. 47H

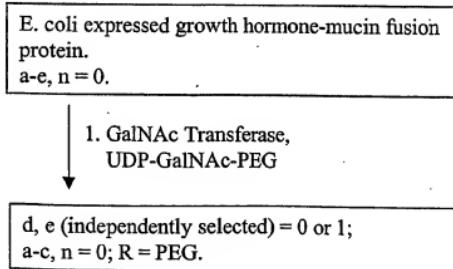


FIG. 47I

221/498

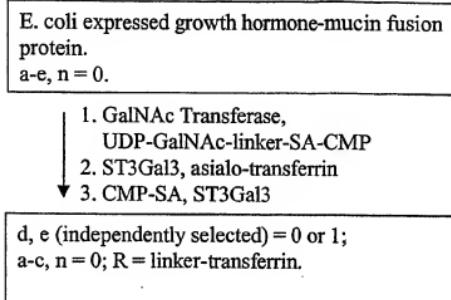


FIG. 47J

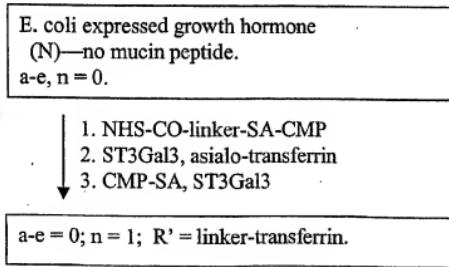
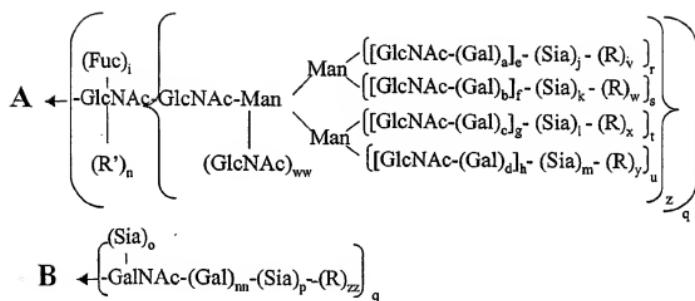
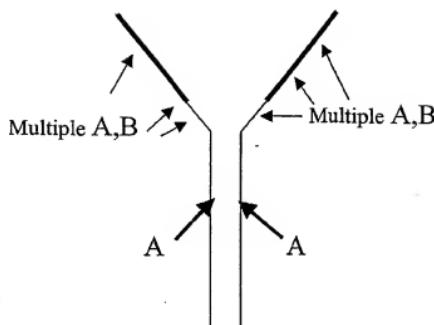


FIG. 47K

222/498



a-d, i-m, q-u, w, z, nn, ww, zz (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

n, v-y = 0;

R = modifying group, mannose, oligo-mannose;

R' = H, glycosyl residue, modifying group, glycoconjugate.

FIG. 48A

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CHO, BHK, 293 cells, Vero or transgenic animals  
expressed TNF Receptor IgG Fusion.  
a-m, o-u, aa (independently selected) = 0 or 1;  
n = 1; v-z = 0.

- ↓  
1. CMP-SA, ST3Gal1  
2. galactosyltransferase, UDP-Gal  
3. CMP-SA-PEG, ST3Gal3

a-m, o-u, v-y, aa (independently selected) = 0 or 1;  
n = 1; z = 0; R = PEG.

## FIG. 48B

CHO, BHK, 293 cells, Vero expressed  
TNF Receptor IgG Fusion.  
a-m, o-u, aa (independently selected) = 0 or 1;  
n = 1; v-z = 0.

- ↓  
1. sialidase  
2. CMP-SA-PEG, ST3Gal1

a-i, p-u, z, aa (independently selected) = 0 or 1;  
n = 1; o, j-m, v-y = 0; R = PEG.

## FIG. 48C

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CHO, BHK, 293 cells, Vero expressed  
TNF Receptor IgG Fusion.  
a-m, o-u, aa (independently selected) = 0 or 1;  
n = 1; v-z = 0.

↓ 1. galactosyltransferase, UPD-Gal-PEG

a-m, o-u, v-y, aa (independently selected) = 0 or 1;  
n = 1; z = 0; R = PEG.

## FIG. 48D

CHO; BHK, 293 cells, Vero or transgenic animals  
expressed TNF Receptor IgG Fusion.  
a-m, o-u, aa (independently selected) = 0 or 1;  
n = 1; v-z = 0.

↓ 1. CMP-SA, ST3GalI  
2. galactosyltransferase, UPD-Gal-PEG

a-m, o-u, v-y, aa (independently selected) = 0 or 1;  
n = 1; z = 0; R = PEG.

## FIG. 48E

225/498

CHO, BHK, 293 cells, Vero or transgenic animals  
expressed TNF Receptor IgG Fusion.  
a-m, o-u, aa (independently selected) = 0 or 1;  
n = 1; v-z = 0.

↓  
1. CMP-SA-levulinate, ST3Gall  
↓  
2. H<sub>4</sub>N<sub>2</sub>-PEG

a-m, o-u, v-y, aa (independently selected) = 0 or 1;  
n = 1; z = 0; R = PEG.

## FIG. 48F

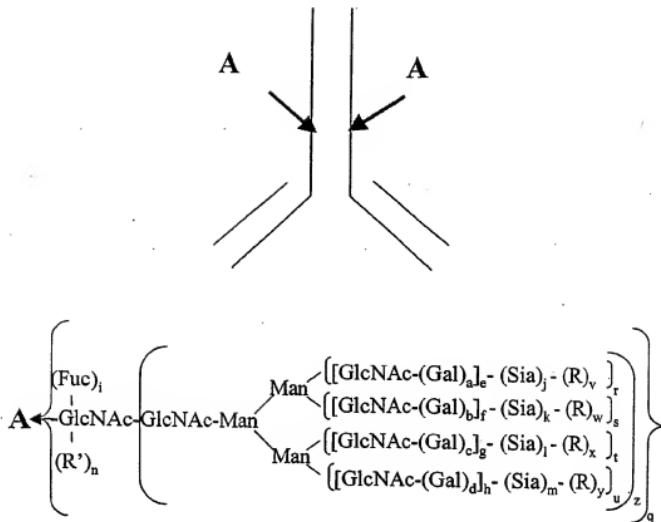
CHO, BHK, 293 cells, Vero expressed  
TNF Receptor IgG Fusion.  
a-m, o-u, aa (independently selected) = 0 or 1;  
n = 1; v-z = 0.

↓  
1. CMP-SA-PEG,  $\alpha$ 2,8-ST

a-i, o, q-u, v-z, aa (independently selected) = 0 or 1;  
n = 1; j-m, p (independently selected) = 0 to 2;  
v-z (independently selected) = 1,  
when j-m, p (independently selected) is 2;  
R = PEG.

## FIG. 48G

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a-d, i, l, q-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

j-k (independently selected) = 0 or 1.

M = 0 to 20.

n, v-y = 0; z = 0 or 1;

R = polymer, toxin, radioisotope-complex, drug, mannose, oligo-mannose.

R' = H, glycosyl residue, modifying group, glycoconjugate.

FIG. 49A

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CHO, BHK, 293 cells, Vero expressed Herceptin.  
 a, c, i (independently selected) = 0 or 1;  
 e, g, r, t = 1; b, d, f, h, j-m, n, s, u-y = 0;  
 q, z = 1.

- ↓  
 1. galactosyltransferase, UPD-Gal  
 2. CMP-SA-toxin, ST3Gal3

a, c, i, j, l (independently selected) = 0 or 1;  
 e, g, r, t = 1; R = toxin;  
 f, h, k, m, n, s, u-y = 0; q, z = 1;  
 v-y (independently selected) = 51,  
 when j, l (independently selected) is 1.

FIG. 49B

CHO, BHK, 293 cells, Vero or fungal expressed Herceptin.  
 a, c, i (independently selected) = 0 or 1;  
 e, g, r, t = 1; b, d, f, h, j-m, n, s, u-y = 0;  
 q, z = 1.

- ↓  
 1. galactosyltransferase,  
 UPD-Gal-Toxin

a, c, i (independently selected) = 0 or 1;  
 e, g, r, t = 1; f, h, j-m, n, s, u-y = 0;  
 q, z = 1; v-y (independently selected) = 1,  
 when a, c (independently selected) is 1;  
 R = toxin.

FIG. 49C

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Fungi expressed Herceptin.

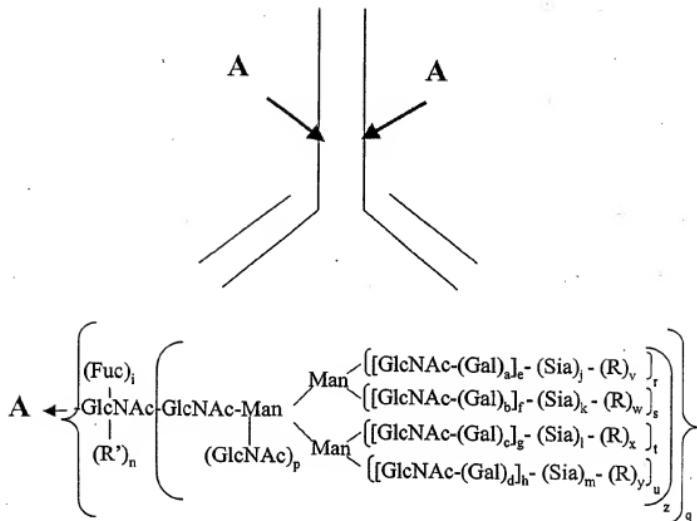
e, g, i, r, t (independently selected) = 0 or 1;  
a-d, f, h, j-m, n, s, u-y = 0; q, z = 1.

- 1. Endo-H
- 2. Galactosyltransferase, UDP-Gal
- 3.. CMP-SA-radioisotope complex, ST3Gal3

a-m, r-z= 0; q, n = 1;  
R' = -Gal-Sia-radioisotope complex.

FIG. 49D

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a-d, i, p-u, (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

j-m (independently selected) = 0 or 1.

n, v-y = 0; z = 0 or 1;

R = polymer, toxin, radioisotope-complex, drug, mannose, oligo-mannose.

R' = H, glycosyl residue, modifying group, glycoconjugate.

FIG. 50A

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CHO, BHK, 293 cells, Vero expressed Synagis.  
 $a, c, i$  (independently selected) = 0 or 1;  
 $e, g, r, t = 1$ ;  
 $b, d, f, h, j-m, n, s, u-y = 0$ ;  $q, z = 1$ .

- ↓
1. galactosyltransferase, UPD-Gal
  2. CMP-SA-PEG, ST3Gal3

$a, c, i, j, w$ , (independently selected) = 0 or 1;  
 $e, g, r, t = 1$ ;  $f, h, k, m, n, s, u-y = 0$ ;  
 $q, z = 1$ ;  $v-y$  (independently selected) = 1,  
when  $j, l$  (independently selected) is 1;  
R = PEG.

FIG. 50B

CHO, BHK, 293 cells, Vero or fungal expressed  
Synagis.  
 $a, c, i$  (independently selected) = 0 or 1;  
 $e, g, r, t = 1$ ;  $b, d, f, h, j-m, n, s, u-y = 0$ ;  
 $q, z = 1$ .

- ↓
1. galactosyltransferase,  
UPD-Gal-PEG

$a, c, i, w$  (independently selected) = 0 or 1;  
 $e, g, r, t = 1$ ;  $f, h, j-m, n, s, u-y = 0$ ;  
 $q, z = 1$ ;  $v-y$  (independently selected) = 1,  
when  $a, c$  (independently selected) is 1;  
R = PEG.

FIG. 50C

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Fungi expressed Synagis.

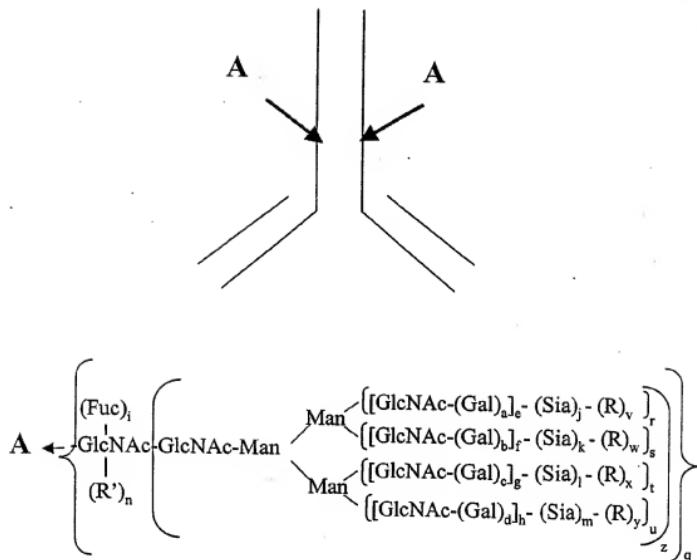
e, g, i, r, t (independently selected) = 0 or 1;  
a-d, f, h, j-m, n, s, u-y = 0; q, z = 1.

- ↓
1. Endo-H
  2. Galactosyltransferase, UDP-Gal
  - 3.. CMP-SA-PEG, ST3Gal3

a-m, r-z= 0; q, n = 1; R' = -Gal-Sia-PEG.

FIG. 50D

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a-d, i, q-u, w (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 6.

j-m (independently selected) = 0 to 20.

n, v-y = 0; z = 0 or 1;

R = polymer, toxin, radioisotope-complex, drug, mannose, oligo-mannose.

R' = H, glycosyl residue, modifying group, glycoconjugate.

FIG. 51A

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CHO, BHK, 293 cells, Vero expressed Remicade.  
 $a, c, i$  (independently selected) = 0 or 1;  
 $e, g, r, t = 1$ ;  $b, d, f, h, j-m, n, s, u-y = 0$ ;  
 $q, z = 1$ .

- ↓
1. galactosyltransferase, UDP-Gal
  2. CMP-SA-PEG, ST3Gal3

$a, c, i, j, l$  (independently selected) = 0 or 1;  
 $e, g, r, t = 1$ ;  $f, h, k, m, n, s, u-y = 0$ ;  
 $q, z = 1$ ;  $v-y$  (independently selected) = 1,  
when  $j, l$  (independently selected) is 1;  
R = PEG.

FIG. 51B

CHO, BHK, 293 cells, Vero or fungal expressed Remicade.  
 $a, c, i$  (independently selected) = 0 or 1;  
 $e, g, r, t = 1$ ;  $b, d, f, h, j-m, n, s, u-y = 0$ ;  
 $q, z = 1$ .

- ↓
1. galactosyltransferase,  
UPD-Gal-PEG

$a, c, i$  (independently selected) = 0 or 1;  
 $e, g, r, t = 1$ ;  $f, h, j-m, n, s, u-y = 0$ ;  
 $q, z = 1$ ;  $v-y$  (independently selected) = 1,  
when  $a, c$  (independently selected) is 1;  
R = PEG.

FIG. 51C

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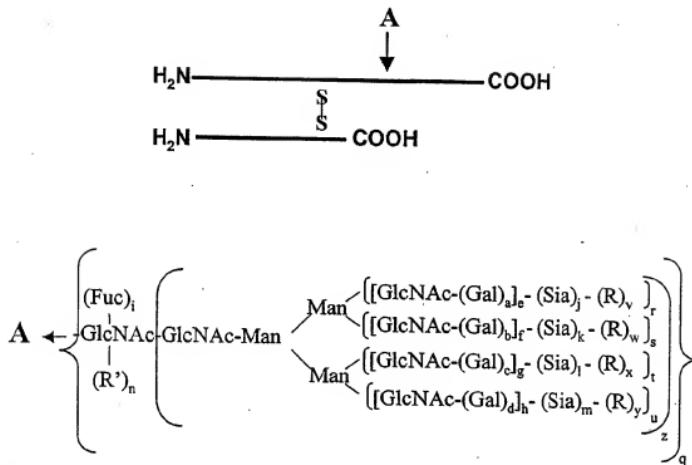
Fungi expressed Remicade.  
e, g, i, r, t (independently selected) = 0 or 1;  
a-d, f, h, j-m, n, s, u-y = 0; q, z = 1.

- ↓
1. Endo-H
  2. Galactosyltransferase, UDP-Gal
  - 3.. CMP-SA-radioisotope complex, ST3Gal3

a-m, r-z= 0; q, n = 1;  
R' = -Gal-Sia-radioisotope complex.

FIG. 51D

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a-d, i, q-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

j-m (independently selected) = 0 or 1.

n, v-y = 0; z = 0 or 1;

R = modifying group, mannose, oligo-mannose;

R' = H, glycosyl residue, modifying group, glycoconjugate.

FIG. 52A

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CHO, BHK, 293 cells, Vero expressed Reopro.  
a-m, r-u (independently selected) = 0 or 1;  
n = 0; v-y = 0; z = 1.

- ↓  
1. Sialidase  
2. CMP-SA-PEG, ST3Gal3

a-m, r-u (independently selected) = 0 or 1;  
v-y (independently selected) = 1,  
when j-m (independently selected) is 1;  
n = 0; R = PEG; z = 1.

## FIG. 52B

Insect cell expressed Reopro.  
a-h, j-n, s-y = 0; i, r (independently selected) = 0 or 1;  
z = 1.

- ↓  
1. GNT's 1&2, UDP-GlcNAc-PEG

a-d, f, h, j-n, s, u, w, y = 0;  
e, g, i, r, t, v, x (independently selected) = 0 or 1;  
v, x (independently selected) = 1,  
when e, g (independently selected) is 1;  
z = 1; R = PEG.

## FIG. 52C

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Yeast expressed Reopro.

a-n = 0; r-y (independently selected) = 0 to 1;

z = 1;

R (branched or linear) = Man, oligomannose or  
polysaccharide.

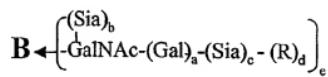
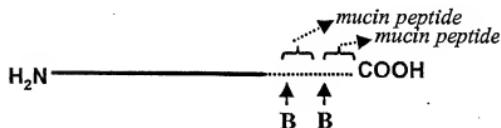
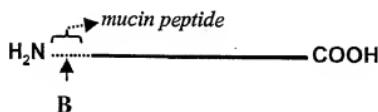
1. Endo-H

2. Galactosyltransferase, UDP-Gal-PEG

a-m, r-z= 0; n = 1; R' = -Gal-PEG.

FIG. 52D

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a-c, e (independently selected) = 0 or 1;  
 d = 0; R = polymer

FIG. 52E

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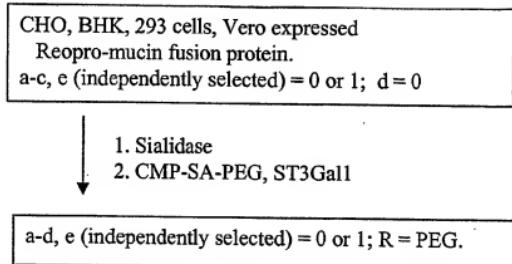


FIG. 52F

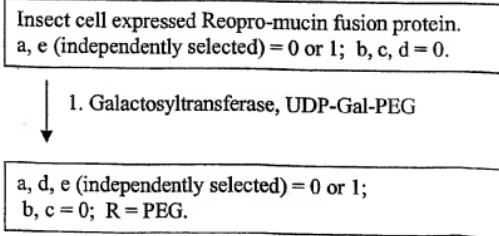


FIG. 52G

240/498

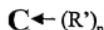
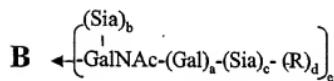
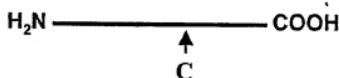
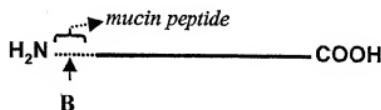
E. coli expressed Reopro-mucin fusion protein.  
a-e = 0.

1. GalNAc Transferase, UDP-GalNAc  
2. CMP-SA-PEG, sialyltransferase

c, d, e (independently selected) = 0 or 1;  
a, b = 0; R = PEG.

FIG. 52H

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a-c, e (independently selected) = 0 or 1;  
 d = 0; R = polymer, linker.

FIG. 52I

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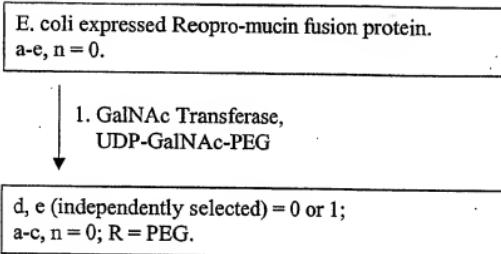


FIG. 52J

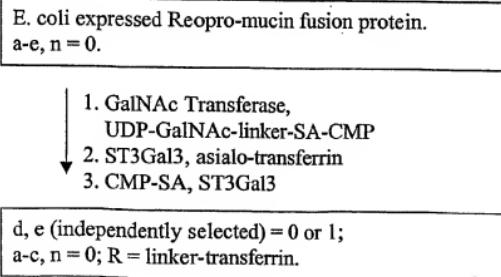


FIG. 52K

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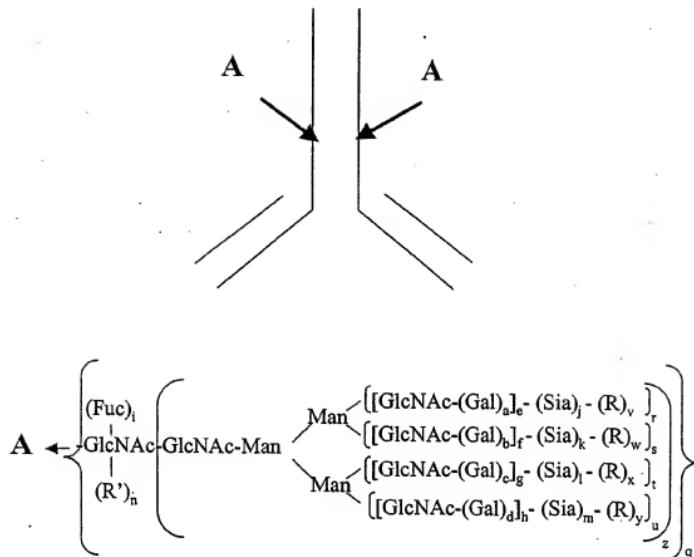
E. coli expressed Reopro(N)—no mucin peptide.  
a-e, n = 0.

- ↓
1. NHS-CO-linker-SA-CMP
  2. ST3Gal3, asialo-transferrin
  3. CMP-SA, ST3Gal3

a-e = 0; n = 1; R' = linker-transferrin.

FIG. 52L

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a-d, i, q-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

j-m (independently selected) = 0 or 1.

n, v-y = 0; z = 0 or 1; R = polymer, toxin, radioisotope-complex, drug, glycoconjugate.

R' = H, sugar, glycoconjugate.

z

FIG. 53A

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CHO, BHK, 293 cells, Vero or transgenic animal expressed Rituxan.

a, c, i (independently selected) = 0 or 1;  
e, g, r, t = 1; b, d, f, h, j-m, n, s, u-y = 0; q, z = 1.

1. galactosyltransferase, UDP-Gal
2. CMP-SA-toxin, ST3Gal3

a, c, i, j, l (independently selected) = 0 or 1;

e, g, r, t = 1;

f, h, k, m, n, s, u-y = 0; q, z = 1;

v-y (independently selected) = 1,

when j, l (independently selected) is 1;

R = toxin.

FIG. 53B

CHO, BHK, 293 cells, Vero or fungal expressed Rituxan.

a, c, e, g, i, r, t (independently selected) = 0 or 1;  
b, d, f, h, j-m, n, s, u-y = 0; q, z = 1.

1. galactosyltransferase,  
UPD-Gal-drug

a, c, i (independently selected) = 0 or 1;

e, g, r, t = 1; f, h, j-m, n, s, u-y = 0; q, z = 1;

v-y (independently selected) = 1,

when a, c (independently selected) is 1;

R = toxin.

FIG. 53C

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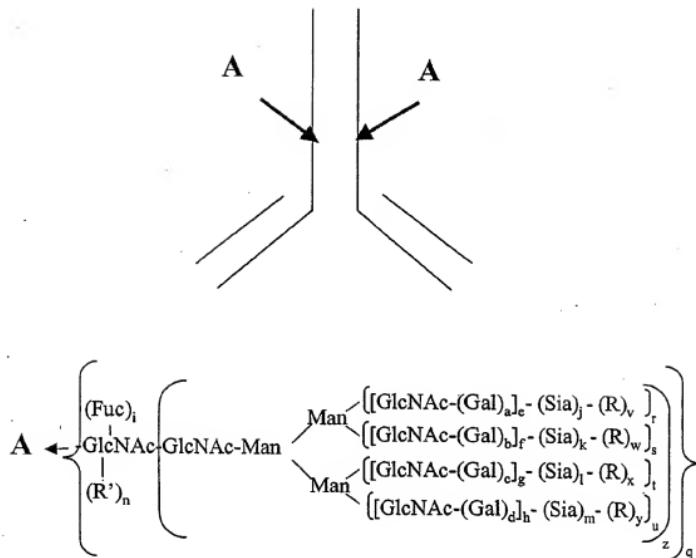
Fungi expressed Rituxan.  
e, g, i, r, t (independently selected) = 0 or 1;  
a-d, f, h, j-m, n, s, u-y = 0; q, z = 1.

1. Endo-H  
2. Galactosyltransferase, UDP-Gal  
3. CMP-SA-radioisotope complex, ST3Gal3

a-m, r-z= 0; q, n = 1;  
R' = -Gal-Sia-radioisotope complex.

FIG. 53D

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a-d, i, q-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

j-m (independently selected) = 0 or 1.

n, v-y = 0; z = 0 or 1;

R = polymer, toxin, radioisotope-complex, drug,  
glycoconjugate, mannose, oligo-mannose.

R' = H, glycosyl residue, modifying group, glycoconjugate.

FIG. 53E

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CHO, BHK, 293 cells, Vero or transgenic animal  
expressed Rituxan.

a, c, i (independently selected) = 0 or 1;  
e, g, r, t = 1; b, d, f, h, j-m, n, s, u-y = 0;  
q, z = 1.

1. galactosyltransferase, UDP-Gal
2. CMP-SA-PEG, ST3Gal3

a, c, i, j, l (independently selected) = 0 or 1;  
e, g, r, t = 1; f, h, k, m, n, s, u-y = 0;  
q, z = 1; v-y (independently selected) = 1,  
when j, l (independently selected) is 1;  
R = PEG.

FIG. 53F

Fungi, yeast or CHO expressed Rituxan.

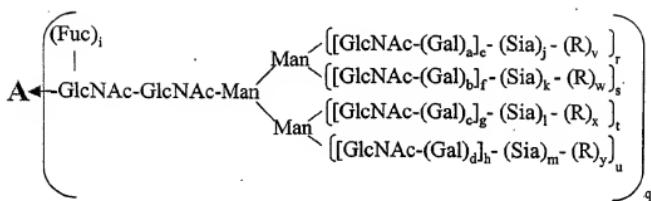
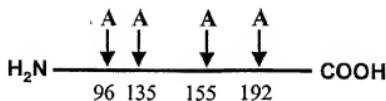
e, g, i, r, t, v, x (independently selected) = 0 or 1;  
a-d, f, h, j-m, n, s, u, w, y = 0; q, z = 1;  
R (independently selected) = mannose, oligomannose,  
polymannose.

1. mannosidases (alpha and beta)
2. GNT-I,II, UDP-GlcNAc
3. Galactosyltransferase, UDP-Gal-radioisotope

a-m, r-z = 0; q, n = 1;  
R' = -Gal-radioisotope complex.

FIG. 53G

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a-d, i, q-u (independently selected) = 0 or 1.

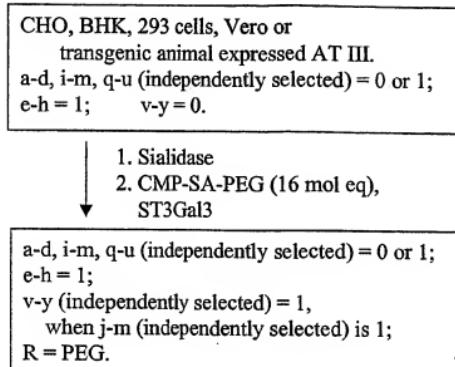
e-h (independently selected) = 0 to 6.

j-m (independently selected) = 0 to 100.

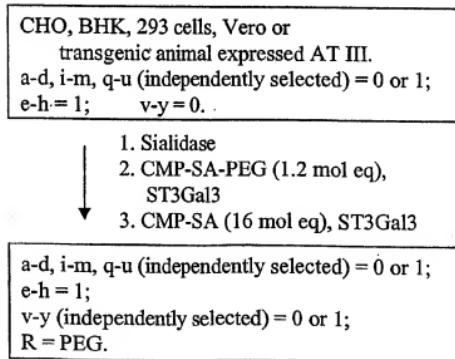
v-y = 0; R = mannose, polymer.

FIG. 54A

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**FIG. 54B**



**FIG. 54C**

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NSO expressed AT III.  
 a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y = 0;  
 Sia (independently selected) = Sia or Gal.

- 1. Sialidase and  $\alpha$ -galactosidase
- 2. Galactosyltransferase, UDP-Gal
- 3. CMP-SA-PEG, ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1;  
 v-y (independently selected) = 1,  
 when j-m (independently selected) is 1;  
 R = PEG.

FIG. 54D

CHO, BHK, 293 cells, Vero or  
 transgenic animal expressed AT III.  
 a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1; v-y = 0.

- 1. Sialidase
- 2. CMP-SA-PEG (16 mol eq),  
 ST3Gal3
- 3. CMP-SA, ST3Gal3

a-d, i-m, q-u (independently selected) = 0 or 1;  
 e-h = 1;  
 v-y (independently selected) = 0 or 1;  
 R = PEG.

FIG. 54E

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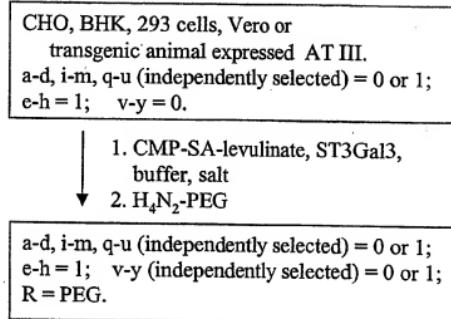


FIG. 54F

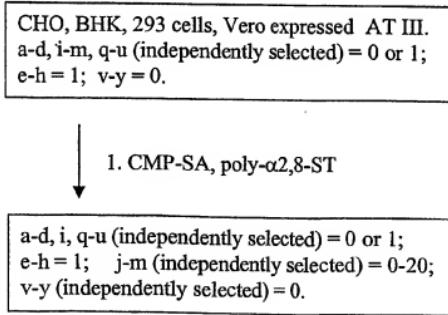
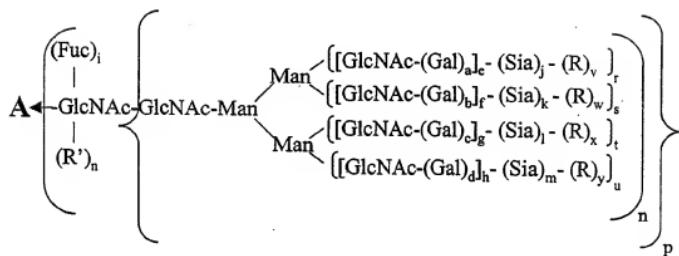
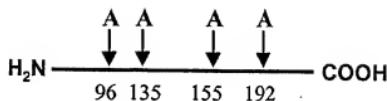


FIG. 54G

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a-d, i, p-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 6.

j-m (independently selected) = 0 to 100.

v-y = 0 to 100.

R = polymer, linker, mannose.

R' = H, sugar, glycoconjugate.

FIG. 54H

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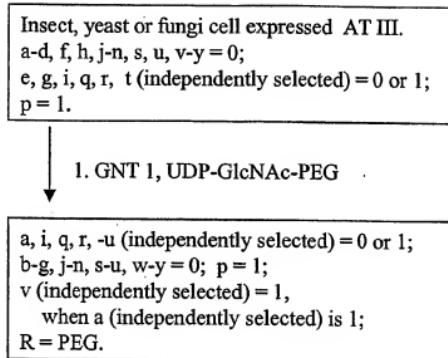


FIG. 54I

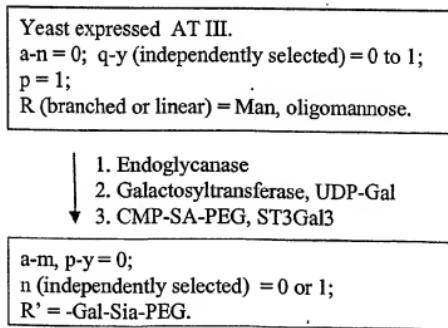


FIG. 54J

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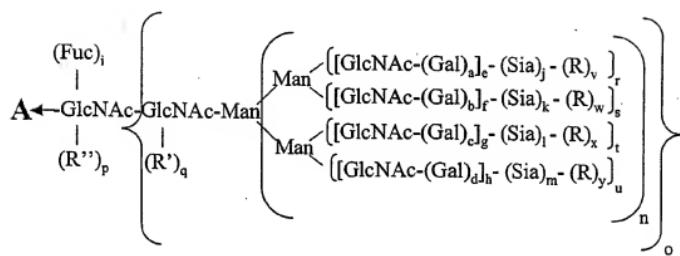
CHO, BHK, 293 cells, Vero expressed AT III.  
a-d, i-m, q-u (independently selected) = 0 or 1;  
e-h = 1; v-y = 0.

- ↓
1. CMP-SA-linker-Gal-UDP,  
ST3Gal3
  2. Galactosyltransferase, transferrin  
treated with endoglycanase

a-m, q-u (independently selected) = 0 or 1;  
p = 1; n = 0;  
v-y (independently selected) = 0 or 1;  
R = linker-transferrin.

FIG. 54K

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a-d, i, n-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

j-m (independently selected) = 0 to 20.

R = polymer.

R', R'' (independently selected) = sugar, glycoconjugate.

FIG. 54L

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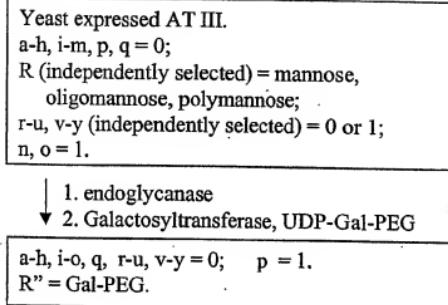


FIG. 54M

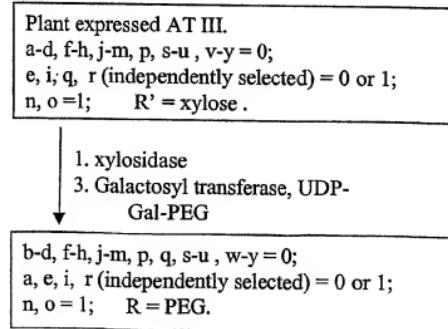


FIG. 54N

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CHO, BHK, 293 cells, Vero, transgenic animal  
expressed AT III.

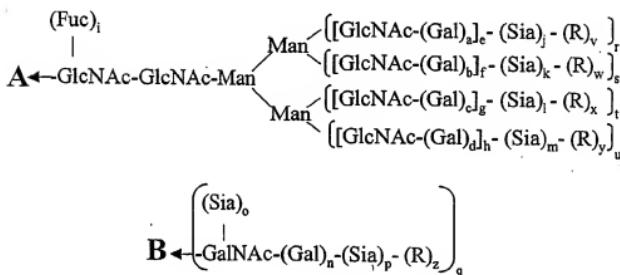
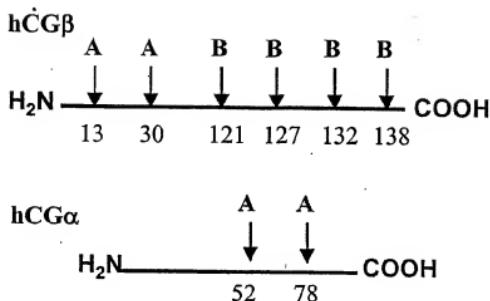
a-h, i-o, r-u (independently selected) = 0 or 1;  
p, q, v-y = 0.

1. CMP-SA-PEG,  
ST3Gal3

a-h, i-o, r-u (independently selected) = 0 or 1;  
p, q = 0; v-y (independently selected) = 0 or 1;  
R = PEG.

FIG. 54O

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a-d, i, n-u (independently selected) = 0 or 1.

e-h (independently selected) = 0 to 4.

j-m (independently selected) = 0 to 20.

v-z = 0; R = polymer

FIG. 55A